
iPSC Extracellular Vesicles for Diabetes Therapy

Grant Award Details

iPSC Extracellular Vesicles for Diabetes Therapy

Grant Type: Quest - Discovery Stage Research Projects

Grant Number: DISC2-13163

Investigator:

Name:	Song Li
Institution:	University of California, Los Angeles
Type:	PI

Award Value: \$1,354,928

Status: Pre-Active

Grant Application Details

Application Title: iPSC Extracellular Vesicles for Diabetes Therapy

Public Abstract: **Research Objective**

We will derive extracellular vesicles (EVs) from induced pluripotent stem cells (iPSCs), characterize the content and immunomodulatory activity of EVs, and deliver iPSC-EVs to treat Type-1 diabetes.

Impact

Type 1 diabetes (T1D) is an autoimmune disease and there is no therapy to preserve islet cells. Accomplishment of this project will generate a new therapeutic modality for T1D treatment.

Major Proposed Activities

- EV isolation, characterization and reproducibility
- Scaling up EV production in a bioreactor
- Analysis of iPSC EV content and identification of the components for EV quality control
- Development of a hydrogel delivery platform for EV delivery and prolonged presentation
- In vitro assessment of immunomodulatory properties of EVs and development of in vitro functional assay
- Evaluation of safety and immunomodulatory properties of iPSC EVs in vivo in T1D mouse models

Statement of Benefit to California: Type 1 diabetes (T1D) is an autoimmune disease characterized by the destruction of insulin-producing beta cells by patient's own immune cells. This project aims to develop cell-free immunomodulatory therapeutics based on the extracellular vesicles (EVs) secreted by induced pluripotent stem cells (iPSCs) to treat T1D. This project will develop a new therapeutic modality for the treatment of T1D and autoimmune diseases, and will benefit our citizens and healthcare in California and beyond.

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